IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A method of removing fluoro-carbon polymer chamber residue from a plasma processing system, comprising:

introducing a process gas into a process chamber of the plasma processing system, the process gas consisting of CO, or CO in combination with inert Ar gas;

maintaining a pressure between 10 mTorr and 100 mTorr within the process chamber;

generating a plasma from the process gas;

exposing the fluoro-carbon polymer chamber residue to the plasma in a waferless dry cleaning process to form a volatile reaction product from the residue, where a shield wafer is not provided on a substrate holder of the plasma processing system so that the substrate holder is cleaned by the waferless dry cleaning process; and

exhausting the reaction product from the process chamber, wherein the method of removing fluoro-carbon polymer chamber residue using a process gas consisting of CO or CO in combination with Ar results in reduced chamber residue when compared to a method of removing fluoro-carbon polymer chamber residue using a process gas consisting of Ar in combination with O_2.

Claim 2 (Canceled).

Claim 3 (Original): The method according to claim 1, wherein the exposing further comprises providing a substrate on a substrate holder in the process chamber.

Claim 4 (Original): The method according to claim 1, further comprising performing at least one manufacturing process in the process chamber before repeating the introducing, generating, exposing, and exhausting.

Claims 5-7 (Canceled).

Claim 8 (Original): The method according to claim 1, wherein the introducing comprises flowing the process gas at a gas flow rate between about 100 sccm and about 5,000 sccm.

Claim 9 (Canceled).

Claim 10 (Previously Presented): The method according to claim 1, wherein the introducing comprises flowing the CO at a gas flow rate between about 100 sccm and about 2,000 sccm.

Claim 11 (Canceled)

Claim 12 (Previously Presented): The method according to claim 1, wherein the introducing comprises flowing the inert Ar gas at a gas flow rate less than about 2,000 sccm.

Claim 13-14 (Canceled).

Claim 15 (Original): The method according to claim 1, wherein the plasma processing system comprises upper and lower electrodes, and wherein the generating comprises applying RF frequency between about 1 MHz and about 100 MHz and RF power between about 100 W and about 4,000 W to the electrodes.

Claim 16 (Original): The method according to claim 15, wherein the RF frequency applied to the upper electrode is between about 40 MHz and about 80 MHz and the RF power applied to the upper electrode is between about 600 W and about 900 W, and wherein the RF frequency applied to the lower electrode is between about 1 MHZ and about 3 MHz and the RF power applied to the lower electrode is between about 100 W and about 400 W.

Claim 17 (Original): The method according to claim 1, wherein the exposing is carried out for a time period between about 2 seconds and about 240 seconds.

Claim 18 (Original): The method according to claim 1, wherein the exposing is carried out for a time period between about 15 seconds and about 40 seconds.

Claim 19 (Original): The method according to claim 1, further comprising:

monitoring a signal from the plasma processing system, the signal being indicative of the progress of the dry cleaning method; and

based upon the signal, performing one of the following:

(a) continue performing the dry cleaning process and continue monitoring, or

(b) stopping the cleaning process.

Claim 20 (Original): The method according to claim 19, wherein the monitoring further comprises determining if an intensity level of the signal has reached a threshold value.

Claim 21 (Original): The method according to claim 20, wherein performing (b) occurs after determining that the threshold value has been reached.

Claim 22 (Original): The method according to claim 19, wherein the monitoring comprises using an optical monitoring system to detect light emission from the process chamber.

Claim 23 (Original): The method according to claim 22, wherein the monitoring comprises monitoring emitted that light originates from at least one of carbon monoxide, fluorine, or silicon tetrafluoride.

Claim 24 (Original): The method according to claim 19, wherein the monitoring comprises using a mass sensor to detect a mass signal of a gas in the process chamber.

Claim 25 (Original): The method according to claim 19, wherein the monitoring comprises using a particle monitoring system to detect particle levels in the process chamber.

Claim 26 (Original): The method according to claim 19, wherein the monitoring comprises using a process parameter including at least one of RF generator peak-to-peak voltage or capacitor position in an impedance match network to detect a plasma condition in the process chamber.

Claim 27 (Currently Amended): A system for removing fluoro-carbon polymer chamber residue from a plasma processing system, comprising:

a gas introduction system configured to introduce a process gas into a process chamber of the plasma processing system, the process gas consisting of CO or CO in combination with inert Ar gas;

a pressure maintaining system which maintains a pressure between 10 mTorr and 100 mTorr within the process chamber.

a plasma generating system configured to generate a plasma from the process gas such that the fluoro-carbon polymer chamber residue is exposed to the plasma in a waferless dry cleaning process to form a volatile reaction product from the residue, where a shield wafer is not provided on a substrate holder of the plasma processing system so that the substrate holder is cleaned by the waferless dry cleaning process; and

a exhaustion system configured to exhaust the reaction product from the process chamber, wherein the system for removing fluoro-carbon polymer chamber residue using a process gas consisting of CO or CO in combination with Ar provides reduced chamber residue when compared to a system for removing fluoro-carbon polymer chamber residue using a process gas consisting of Ar in combination with O_2.

Claim 28 (Currently Amended): A system for removing fluoro-carbon polymer chamber residue from a plasma processing system, comprising:

means for introducing a process gas into a process chamber of the plasma processing system, the process gas consisting of CO or CO in combination with inert Ar gas;

means for maintaining a pressure between10 mTorr and 100 mTorr within the plasma processing system,

means for generating a plasma from the process gas such that the fluoro-carbon polymer chamber residue is exposed to the plasma in a dry cleaning process to form a volatile reaction product from the residue, where a shield wafer is not provided on a substrate holder of the plasma processing system so that the substrate holder is cleaned by the waferless dry cleaning process; and

means for exhausting the reaction product from the process chamber, wherein the system for removing fluoro-carbon polymer chamber residue using a process gas consisting of CO or CO in combination with Ar provides reduced chamber residue when compared to a system for removing fluoro-carbon polymer chamber residue using a process gas consisting of Ar in combination with O_2.

Claims 29-30 (Canceled).

Claim 31 (New): The method of Claim 1, wherein the process consists of equal flows of CO and Ar to achieve greater reduction in fluoro-carbon polymer chamber residue when compared to a method using process gas consisting of non-equal flows CO and Ar.

Claim 32 (New): The method of Claim 27, wherein the process consists of equal flows of CO and Ar to achieve greater reduction in fluoro-carbon polymer chamber residue when compared to a method using process gas consisting of non-equal flows CO and Ar.

Claim 33 (New): The method of Claim 28, wherein the process consists of equal flows of CO and Ar to achieve greater reduction in fluoro-carbon polymer chamber residue when compared to a method using process gas consisting of non-equal flow sCO and Ar.